May 20, 1958

Dr. P. Alexander
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Dear Dr. Alexander:

Comments on CETEX draft report, to your letter of May 15.

I am afraid very little helpful emerged at the Washington meeting. I enclose a clipping that may be pertinent. Unfortunately very few biologists are thinking about fundamental problems, though there has been much stress on biomedical problems of spaceflight.

A propos cosmic dust: it is difficult to be certain what the effects of solar radiation will be on a melange of elements, particularly on layers immediately below the surface. As to the oceanic deposits, their meteoritic origin is itself an important controversy.

Panspermia: I would hardly argue with your conclusion on the basis of present knowledge. However, I would again draw attention to protected sites not on the outward exposed surface, and further to the possibility that spores might be protected in transit by association with larger meteoroids. Furthermore we have almost no information on radiation effects in extremely high vacuum. The limiting factor is likely to be temperature since particles of micron dimensions are likely to be very poor emitters (Taber effect) and therefore reach very high temperatures. This still leaves possible the survival of a spore embedded in a fragment of clay, though admittedly this notion places difficulties in the way of transit.

If this were a less vital issue I would not think these counter-arguments very persuasive. But until at least some more cautious empirical work has been done, it seems to me foolish to rely on our preconceptions - some unsuspected factor may emerge that would alter the picture entirely.

In any case I would be quite content with the conclusions you reach under "development of complex molecules" and "contamination of Mars and Venus". I would however stress that only a "soft" landing on the moon can be localized: the long rays show that a crash impact can spread material very nearly around the entire lower circumference (in the absence of atmospheric viscosity and under conditions of low gravity). Indeed, I might mention that it has turned out to be good strategy to show that these conservative issues have some application, possibly remote, even to the moon, and therefore without question to Mars and Venus.

I did not understand the very last sentence. Are you suggesting that nuclear explosions are not likely to be attempted? This should not preclude a recommendation against them. Is this your full statement on radioactive contamination?

I am happy to see the broad perspective in which you view this problem. The template proposal (like our "fragment of an organism") is extremely speculative, but warrants as much attention that some so far unsuspected process will protect against the bacteric idal effect of the short ultra violet light of the sun.

Yours sincerely,

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Professor of Medical Genetics

JL/ew

~~P. S. The ms. etc. follow by second class airmail.~~